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SENIOR BASIC TRAINING COLLE
BANIPUR

PLANNING THE LESSON

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By

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SENIOR BASIC TRAINING COLLEGE * BANIPUR.

CHAPTER I

INTRODUCTION

To many people the word "education" means little more than a series of lessons, and "school" a place in which lessons are given. The lesson itself is thought of as a more or less interesting recital of facts by an informed teacher to an ignorant and passive group of children.

This is, of course, an absurd exaggeration of the facts. However, it was certainly true that, a few years back, the lesson was thought of, by the general public and by many teachers, as a means of imparting information to children who were ignorant of it. During the lesson period the teacher was active—he was talking, making sketches on the blackboard, pointing out parts of maps or pictures, or performing demonstrations with scientific apparatus. The children were passive, sitting in attentive attitudes, and looking and listening. Now and then a question was asked, and the children raised their hands.

From time to time thoughtful teachers protested against education of this kind. They argued that education proceeds through activities of all types, and not through passive looking and listening. Mr. Caldwell Cook, the originator of the "Playway", spoke of the methods commonly in use in the schools, at the time when he was writing, as "spoon-feeding".

The protest against education through lessons developed greatly in the closing years of the nineteenth century and the early years of the twentieth century, and in the years between the two Great Wars efforts were made, with varying success, to introduce into British schools new educational methods such as the Dalton Plan, the Playway, and the Project Method. Much as these plans differed from one another, all agreed in substituting activity of some kind for instruction.

In actual practice, it was generally found that instruction could not be dispensed with, and so the new methods were very seldom fully accepted. Perhaps it may be said that in many schools the new methods are used to supplement lessons; and, in others, lessons supplement the new methods. What is perhaps far more important is that numbers of modern teachers, accepting fully the doctrine of education through self-activity, realize that, even if conditions in the schools make it impossible for them to adopt the new methods in the forms developed by their originators, the lesson itself can provide generous scope for the self-activity of the pupil, directed, guided and stimulated by the teacher. The lesson can be transformed from a mere giving out of instruction, a mere doling out of facts, into an occasion for learning, for thinking, for understanding. Teacher and pupil co-operate in an adventure in which, it is true, the teacher is the guide, but no more; and his guidance is given only when it is essential.

Clearly, such lessons must be planned in advance. The teacher has many things to bear in mind—not merely the information he possesses and that the children do not. He must think of the apparatus he can obtain, of the time allotted to the lesson, and the range of knowledge to be covered. More important still, he must think of the children, of their needs and their capacities, and of the several aims of the lesson.

The beginner is apt to think of his lesson in terms of information only. He knows that he is better informed than the children he has to teach. What more is necessary, then, when planning the lesson, to set out in proper sequence a number of appropriate facts? Perhaps, because of the youth of the children, the teacher should use simple words.

The teacher, approaching his work in this way, finds that he encounters difficulties he had not foreseen. If often happens that what seems so important to the teacher fails to evoke any response in the children. Later, when pupils are tested, it is found that they paid no real attention to what they were told, or that they forgot it as soon as the lesson was ended. It is obvious that they were never interested. The teacher, then, must not only plan his work so that his explanations and narrative are expressed in words that the pupil will understand, but, by knowing something about the interests of children he must prepare himself to interest them, so that they will be eager to understand.

We thus arrive at a conclusion that the late Sir John Adams often emphasized: that it is not sufficient for the teacher to know his subject. He must know his pupils as well. And just as a point on a plane surface must be referred to both an x and a y axis before its position is clearly defined, so must every element of the lesson be thought of in relation to the subject of instruction and to the pupil.

The children are, admittedly, ignorant in comparison with the teacher. This difference is, however, less important than another, due to the fact that the teacher has developed mentally to a point which entitles us to say that, in comparison with him, the pupils are immature.

An illustration will help at this point. A newly born baby needs food, just as its parents do. The food it needs is ultimately the same as its parents require, and will be used for the same purposes—for growth, for maintaining the temperature of the body, and for providing the energy essential for bodily functioning. But the child's digestive organs are immature. Adult food is unsuited to it : it cannot be digested, assimilated or used by the infant's body. And adult information, as the teacher acquired it in the secondary school or the college, is unsuited for assimilation by children who are mentally immature.

The infant's mother takes into her body the food she requires for her own use. She digests it. She converts it into blood, some of which, in the vessels of her mammary glands, is changed into milk—that is, into food in a form suited to infant digestion and assimilation. Thus the child takes into his body the food he requires, just as his mother did. Only the form is changed.

Part of the teacher's task may be compared to this work that goes on in the body of a mother. He has to re-think all that he knows, and change its form until it is suited to the capacity for comprehension of the immature pupils who are to be taught. It is not an easy task. A good many brilliant students never master it—partly, perhaps, because they can never see the need for doing so—and so they fail as teachers, except with older pupils.

The problem presents itself differently on different occasions. It is not so apparent when the teacher is dealing with adult students. It is a different problem in the nursery school from what it is in the infant school, the junior school and the secondary school. In the nursery school the psychological gap between the pupil and the teacher is very great: in the upper forms of the secondary school it is far less so.

When planning his lesson, then, the teacher must bear in mind this gap between himself and his pupils; and remember that he cannot bridge it by using only simple words. Imagination and a sympathetic outlook are necessary.

The teacher will bear in mind, too, that children are naturally curious, when their interest is aroused. But they can be attracted by novelty; so easily that the teacher is constantly tempted to rely far too much upon striking and novel presentations of his subject. The curiosity excited by novelty soon passes, and the object ceases to hold attention when it is no longer novel. Curiosity of this kind does not lead the child to examine objects closely or to think seriously about them, unless the teacher deliberately encourages examination and guides the child's thought. In planning the lesson, therefore, the teacher must foresee the child's reaction to new objects, and plan his own procedure accordingly.

Something has already been said regarding the use of words. Simplicity of vocabulary is not enough—nor is it always necessary. What is essential is that only those words that have a real meaning for children, standing for elements of actual experience, should be used. Children learn words very readily, and often use them in ways which lead us to suppose that they know something about subjects of which they are ignorant. The teacher must plan ways of ensuring that the words introduced into the lesson are thoroughly understood.

Though the teacher talks, in the course of the lesson, about things and the relations between them, it is relatively seldom that actual objects can be brought into the classroom, and the relations between them materially demonstrated. Hence the teacher will be compelled to depend upon representations, which may range from a realistic model to an algebraic symbol. Whatever the representation may be, the teacher must ensure that it is comprehended by the pupils. A picture is superior to a map at some stages of mental development, though to the adult geographer a series of maps, clearly marked with isobars and isotherms, conveys far more than a large collection of pictures could do. The implications of all this are obvious: the materials chosen by the teacher for the purpose of making his topic comprehensible to his class, whether they be verbal, pictorial or diagrammatic, must be psychologically suited to the stage of maturity the children have reached.

The teacher who has planned his lesson wisely in relation to his topic and to his class will be in a position to enter the classroom without anxiety, ready to embark with confidence upon a job he understands and prepared to carry it to a workmanlike conclusion. He has foreseen the difficulties that are likely to arise, and prepared himself to deal with them. He knows the aims his lesson is intended to fulfil, and he has marshalled his own resources for the purpose. And, because he is free of anxiety, he will be able coolly to estimate the value of his work as the lesson proceeds: equally aware of failure and success, and prepared to learn from both.

It may be thought, at first, that in requiring extensive planning along a definite line, a tutor is unduly restricting the freedom of the teacher in training. Would it not be better to give him complete freedom, to allow him to experiment as he wishes, in the belief that he will, through success and failure, evolve a highly individual method of outstanding value?

Certainly the matter might work out in this way. Generally, however, it does not. Freedom most often comes through the mastery of a severe discipline, at the end of which the student knows precisely what is essential to him, and what can with advantage be discarded. What is often called " freedom " is merely laxity and slovenliness: it is the result, not of reflection and wise economy of method, but of laziness. Efficiency discards the superfluous—and only experience can decide what is superfluous—while laziness discards the onerous. The student will find it well worth while to plan his lessons as fully as he can, to spend far more time indeed upon the planning than upon the execution . . . to think about them and to discuss them, before and after giving them. In this way he will train himself through his own self-activity, and develop an insight into the educational process that will stand him in good stead in all his studies of educational theory. The training of the teacher is done in the classroom, where he gathers the experience that reflection, discussion, reading and lectures will weld together into systematic knowledge, which in turn will prepare him to comprehend more fully the experience he gains in the classroom. Thus theory and practice act and react on one another, developing the teacher through his own activities in the classroom, the study and the library. And this process finds both its initiation and its culmination in the act of planning the lesson.

CHAPTER II

FACTORS AFFECTING PLANNING

THE architect, planning a building, has to take into account a number of factors that have nothing to do with the purpose for which the building is designed. Were he entirely free, he would naturally design the building without reference to anything outside it, but in actual practice he has to make use of the site available, and shape his plans accordingly. The result is not what we generally mean when we speak of a compromise, since, whatever the factors working against the architect may be, he must not for a moment lose sight of the purpose of the building. He may have to give up his intention of giving the building a particular shape. He may have to modify his desires in respect of materials. But the finished result must be a church suited to the purpose for which a church is erected, or a school in which the work of a school can be efficiently carried on.

The teacher is similarly situated. He cannot plan lessons entirely as he would wish, taking into account the material of the lesson only. The lesson has to be given to a particular class of children, in conditions not created by the teacher or controlled by him. They often make his task difficult, but they need not adversely affect the result. Difficult conditions will be accepted by courageous and resourceful men as a challenge, that provokes those who accept it to levels of performance seldom attained by those working in what are apparently more favourable circumstances. Reverting to the illustration used in the preceding paragraph, we may recall how often a great cathedral owes its characteristic beauty to the way in which an architect has overcome the immense difficulties presented by an unusual site.

What are the conditions that the teacher must take into account? First, there is the class itself, considered as a group and as made up of individual children. Then there are the material resources, for the purposes of illustration and demonstration and exercise, of the school. There are the teacher's own resources, through which he is able to utilize, and if necessary to supplement, those of the school.

More important than these in the determination of the plan of the lesson are the aims the teacher has in view. Why is he teaching at all? Why is he teaching this particular subject? Why is he preparing this particular lesson? These are questions he should consider carefully, because it is in the light of them that the lesson must be first planned, and then judged. The teacher's purpose is to plan a lesson which, given in the actual conditions, shall fulfil his aims, both general and specific. The critic will discuss, as to the teacher's notes, whether the lesson is planned to fulfil the aims in the given conditions; and, as to the teacher's performance in the classroom, whether the lesson, as given, fulfilled the teacher's stated aims. It is, of course, possible to criticize the aims themselves—but the discussion of this point must be left to educational theory.

It is clear that a concert hall in which only a few people are able to hear the performance, or a theatre in which large numbers of people are unable to see the stage, must be considered as a failure. It cannot be justified on grounds of architectural beauty or skill. The aim in building it—or what should have been the aim—has not been fulfilled. Precisely the same thing is true of the lesson.

Before he begins making notes of the lesson proper, the teacher should write down, in tabular form, the conditions he must bear in mind throughout his planning. They are these:

THE CLASS
1. The School.
2. Number of Children.
3. Average Age.
4. Standard of Attainment.
5. Children's Knowledge assumed by Teacher.

APPARATUS AND MATERIALS AVAILABLE

AIMS OF THE LESSON
1. General.
2. Specific.

Only a few words will be necessary regarding each of these points. It is clear, for example, that a history lesson on a given topic in a "modern" type of secondary school will differ greatly from one given in a school of the "grammar-school" or "technical" type. It is clear, too, that the procedure with a class of twelve children will differ from that which the teacher will be compelled to adopt when he deals with a class of fifty.

The average age of the children in a class is only a rough indication of the degree of maturity at which the children have arrived, but it is usually the only one available to the teacher who does not know the children well. This information can be supplemented by the reports of class teachers as to whether the children are "bright" or "dull" or "backward".

It is essential, in planning a lesson, to know as accurately as possible what knowledge of the topic the children already possess. That the children have already been given a lesson on "the cotton industry" or have "done" the physical features of Africa means very little. The teacher who assumes that children know certain things, and bases his lesson on this assumption, is running the risk of failure unless he takes great pains to assure himself beforehand—if possible, by meeting the children and questioning them—that it is justified.

The same thing holds true of material equipment. The teacher must not assume, unless he knows the resources of the school at first hand, that he will find all the pictures, maps, diagrams, books, models and other apparatus he would like to use when giving his lesson. Over and over again the teacher-in-training, planning his lesson without actual knowledge of the resources of the school in which it is to be given, has found himself without something vital to his plan. It is useless to complain that no school should be without an orographical map of Europe. The fact is that there are many schools without a satisfactory map of this kind, and the people who teach in them have to discover ways of getting along without them. Students who give lessons in schools must find out for themselves what the school can offer them, and plan their lessons accordingly. It may be said, in passing, that students who are clear in their own minds as to what they want for teaching purposes and are willing to spend time and take pains to make their lessons as perfect as possible, can often make pictures, maps and diagrams that are far better for the purpose than any commercial firm can supply. The reason for this is obvious, and it is hardly necessary to point out what great value this preparation has for the teacher himself, as contributing to his own education and training.

An essential part of the apparatus is the blackboard and its accessories—an easel, a cleaner that really removes the chalk and leaves a good writing surface, plenty of good white chalk and a range of bright coloured chalks. If possible, there should be two blackboards: one to use for "current" notes, rapid sketches, unusual words and the like, that will be cleaned off soon after they are written, and another on which will be gradually built up a summary of the lesson itself, that may remain for purposes of reference and further work for some days after the lesson. More will be said in a later chapter about this blackboard summary.

We come now to the aims of the lesson. One of the specific aims will obviously be the giving of information. If a teacher delivers a lesson on "How the Post Office Works" he will wish the children, at the end, to know how the post office works. The acquisition of accurate information about the lesson topic is a specific aim of practically every lesson. But it is not the only aim, nor is it necessarily the most important. For the lesson on the Post Office may be one of a series dealing with large commercial enterprises. The teacher's aim may be to give an idea of the business system of the country, showing how private enterprise and state ownership exist together and supplement each other, and he may consider this as essential to the development in the child of a consciousness of the community in which he lives and his own part in it. Another teacher uses the same material with a different aim, intending that the child shall develop an economic outlook on the world about him.

The teacher will not, perhaps, find very great difficulty in deciding what are his aims in giving the lesson. It is important that he should write them down, and that he should bear them constantly in mind throughout the whole of his preparation.

A difficulty arises when we come to consider general aims. A generation ago a teacher who stated that a general aim of arithmetic lessons was "training in accuracy" would have been listened to with respect. To-day, as a result of a great deal of careful psychological experiment, our attitude has changed. Drilling in arithmetic may lead to accuracy in the manipulation of figures, but to nothing more. It does not lead to increased accuracy in the use of words, in physical experiments: in other words, the training is limited to the field in which the training is given. There is no transfer of general accuracy.

The discussion of this important matter is impossible here. The student is referred to modern text-books of educational psychology, where the question of "transfer of training" receives the attention warranted by its very great importance. Here we can only warn the teacher of special subjects that he must not be satisfied with glib statements about the general training that they give to pupils who study them, but must take pains to assure himself that the general aims at

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made easy a complex process that at first seemed difficult. Reliable habits, however, are built up only upon a foundation of sound practice. In teaching, as in other fields of work, effortless competence is only acquired through persistence, devotion and hard work during the period of training.

Exercises

1. How would you explain the working of a Sten gun to:
   - (*a*) A man who knew nothing of firearms ?
   - (*b*) A man accustomed to a sporting gun ?
   - (*c*) A man who could handle a tommy gun ?
2. At the present moment a good many people use terms which they cannot possibly understand. It is illuminating to a man who intends to be a teacher to note the various meanings that people, at varying educational levels, give to some of these terms. As examples, take:
   - (*a*) Splitting the atom. (*b*) Jet propulsion.
   - (*c*) Inferiority complex. (*d*) Law of averages.
   - (*e*) Inflation (monetary). (*f*) The Gold Standard.
   - (*g*) Basic English. (*h*) Vitamins.
3. Young teachers-in-training who have had experience in Youth Groups of the working of Discussion Groups will find that the topics treated in the preceding chapters will suggest others suited to discussion by groups. The following are a few only:
   - (*a*) What are the principal aims of all education ?
   - (*b*) What are the aims of teaching mathematics, geography, history, literature, etc. ?
   - (*c*) In what ways does the lesson differ from the sermon, the lecture, the tutorial session, the seminar, the "brain trust", the "quiz",

and the debate? What is the place of each in a balanced system of education? Should the proportion of school time devoted to lessons vary in different types of school?

4. Make out a critical inventory of the material apparatus of any school to which you have access.

CHAPTER III

TEACHING METHODS

THE teacher will be compelled, when giving his lesson, to make use of certain teaching methods or devices. It is well that he should be clear in his mind, when planning his lesson, what these devices are, and how and when he proposes to make use of them.

Some part of the teacher's work will call for EXPOSITION, the imparting of knowledge by means of clear statements which can be understood by the children. The words which the teacher uses must be familiar ones; since, if children have to puzzle over the meaning of the word, they lose the meaning of what follows it; and, once they have lost the thread of the teacher's exposition, they will fail to keep up with the remainder of the lesson. It is well, if the teacher realizes that he must make use of unfamiliar words, to make an opportunity of explaining them, and ensuring that they are fully understood, before the lesson begins.

During the teacher's exposition the child is not completely passive. He must listen and he must understand: both call for effort. Neither calls for the same mental effort on the part of the child that "thinking for himself" demands. Since the child develops himself and educates himself by means of his own efforts, it follows that methods that make greater demands upon the child—demands that, given interest and goodwill, he is able to meet—are better than mere exposition.

It may be pointed out that methods that make insufficient demands upon children leave a residuum of unsatisfied interest that shows itself in attention to objects irrelevant to the lesson. The teacher who relies too much upon exposition soon loses the attention of the class. The energy that should be expended in co-operation with him in attaining the ends of the lesson is expended in trifling acts of mischief or in daydreaming. Every adult has memories of teacher who went on talking—talking—talking—while bored children wondered how much longer the lesson would last.

Exposition cannot, however, be avoided. It can be reduced to the essential minimum. The teacher must see, when he resorts to it, that it is brief, clear and interesting. It should be thought out beforehand, and all such lame phrases as "I mean to say" and the like eliminated. Exposition should always be followed by demands for mental effort on the part of the children. One of the most obvious of these is that members of the class should be asked to state, in their own words, what they have just heard. Expectation of a demand of this kind keeps the children alert while the teacher is talking. Perhaps, at this point, the caution should be repeated—What we ask of children should not be so easy that they can achieve it without effort, or so difficult that they cannot possibly accomplish it. We should not make our pupils contemptuous or hopeless.

EXPLANATION is something more than mere exposition. The statement, "A bee's sting makes a very painful wound" is mere exposition. The pupil who asks, " Why does a bee's sting give more pain than a wasp's ? " is asking for an explanation. We tell him that a wasp's sting is like a needle, which does not tear the flesh ; while the bee's sting is like a saw, which tears the flesh a good deal. Our explanation has set the bee's sting in a class of objects known to the child. We have, however, in the course of our explanation, suggested that one sting was like a needle and the other like a saw—that is to say, we have used familiar and common objects as illustrations of what we mean when we are talking of unfamiliar ones. ILLUSTRATION is often employed as a means of approaching the unknown by means of the known. The skilful use of appropriate and apt illustration is one of the distinguishing marks of the good teacher. When we speak of a resourceful teacher we mean, amongst other things, one who is never at a loss for an apt illustration to make his meaning clear to his pupils.

The parables to be found in the Bible, more particularly in the New Testament, are worth careful study. They will serve to illustrate how the most difficult matters can be elucidated by means of references to common objects and familiar situations. The illustration may take the form of a story (cf. the Good Samaritan), a fable (cf. the Trees choosing a King), or a passing reference (cf. " Consider the lilies of the field ").

The story, used as an illustration, has the very great advantage that it appeals to the interest of the children, provided it is well chosen and well told. Unless the teacher follows it up with questioning, it will remain an interesting story, and nothing more : this is its drawback. Undoubtedly hundreds of people heard the parable of the Good Samaritan without considering that it bore any relation to their private lives and their moral duties.

Undoubtedly the most effective way of ensuring that children take an active part in a lesson is by the proper use of the QUESTION. The teacher does not put questions to his class for the purpose of confounding an opponent, or scoring a victory, or discrediting a witness, or necessarily to elicit truth. The main purpose of the question, during a lesson, is to stimulate the pupil to the best mental effort of which he is capable.

Questioning is not an easy art. In the first place, few people are able, without practice, to frame questions so clearly and concisely that the purpose of the question is at once apparent. The child's effort should be expended in finding an answer to the question, and not in discovering what the question means.

Answering the question should demand reasonable effort. How much time is still wasted in school with such questions as " London is the capital of England, isn't it ? ".

Answering should never be possible through mere guessing. The child who is asked, " Which is longer—the Nile or the Amazon ? " need never admit ignorance. Whatever he chooses to say, he has a fifty per cent. chance of being right.

One further caution is necessary. Ask one question at a time. Teachers occasionally ask questions in pairs or triplets, or ask a second question before the first is disposed of. Muddle and confusion are thus caused, and at the moment when we are demanding clear thinking.

When planning his lesson, then, the teacher should carefully think out the questions he intends to ask. He should observe the following cautions:

1. Questions should be direct and clear.
2. The language of the question should present no difficulties.
3. The effort demanded in answering the question should be reasonable.
4. The answer to the question should mark an advance—even if only a slight one—in the progress of the lesson.
5. The teacher's reception of answers should be such as to encourage further effort.

When planning his lesson the teacher will realize when and how he must make use of exposition, explanation, illustration (verbal or pictorial) and questioning, and will indicate this in his plan. At first he will, as a rule, incline to depend too much upon exposition, on account of its ease and familiarity. But if he is determined to become a good teacher, one who arouses his pupils to mental effort, he will set himself to master the art of questioning. The lesson carried on by means of question and answer is a piece of effective co-operation, in which boys enjoy their own activity, and are being trained to dependence upon their own efforts, rather than to passive reliance upon another person. Such a lesson, it is clear, furthers the boy's education, since it assists in carrying his development forward to a higher stage of maturity.

Exercises

1. Consider the use that might be made of exposition, illustration and questioning in discussing the following topics with children:

Economy; thrift; independence; cleverness; impatience; patriotism; unselfishness; law; science; illness; adventure.

2. Consider illustrations that might make clear to children life in the following conditions:
    (*a*) As a soldier serving in a small anti-aircraft unit.
    (*b*) As the pilot of a transatlantic plane.
    (*c*) As a coal-miner.
    (*d*) As a Chinese coolie.
    (*e*) As a deep-sea fisherman.
    (*f*) As a travelling salesman.
    (*g*) As a circus proprietor.

3. Listen to a number of conversations, and decide to what extent they are made up of expositions, illustrations, explanations and questions.

4. How would you explain the following to young pupils:
    (*a*) A wet or greasy road is less easy to walk on than a dry one.
    (*b*) A man standing in a railway carriage falls back when the train stops suddenly.
    (*c*) Teeth decay.
    (*d*) Wool should be worn next the skin.
    (*e*) Tea should not be allowed to stand, but should be drunk fresh.

5. What is wrong with the following questions?
    (*a*) What is London? Who founded it, and when?
    (*b*) If I were to ask you why the British are to be found all over the earth, what would you reply?
    (*c*) Can you tell me where Piccadilly is?

CHAPTER IV

THE FIRST STEP—PREPARATION

WE come now, after a consideration of the circumstances of the lesson, the conditions in which it is to be given, and the teaching methods we shall be compelled to employ, to the planning of the lesson itself. The procedure to be followed will be that which was originally suggested by followers of Herbart, the first educator to apply psychology deliberately to education. They urged that the lesson naturally fell into five clearly defined sections—the *five formal steps*—and justified themselves by means of the psychology in which they believed, the "Herbartian Psychology", as it is now generally termed. We no longer accept this psychology in the form in which Herbart developed it, but we can equally well justify our lesson procedure in terms of modern educational psychology.

The first of these five steps is named PREPARATION. It is an introduction to the lesson, but it is more than this. Its function is to prepare the pupil for the steps that are to follow it.

The mere introduction often awakes a temporary interest by the promise of something to come. It says, in effect, that the pupils are going to hear something that is either very new or very interesting. It raises expectation to levels that only a few lessons can fulfil. Children discover this for themselves before the lesson has proceeded far, and consequently the reaction to an exciting introduction is a loss of interest, or precisely the opposite of the effect the teacher hoped for.

If we are to discuss a new topic with another person, no matter whether he be a pupil in a class, a fellow-member of a club, or a casual train acquaintance, it is not unusual to find out—sometimes by a direct question—what he knows about the matter. If he is discussing affairs in the Middle East, we might perhaps ask him, "Have you ever lived in Egypt?" We do this, not to establish our own superiority in the particular field, but to find out where the discussion can start, and upon what foundation we can hope to build. And if someone asks questions about the atomic bomb, or about atomic power, we must begin (if the discussion is to have any value) by finding out what our interrogator believes an atom to be.

Already, attention has been paid to the matter of the pupil's knowledge that has to be assumed by the teacher. In the PREPARATION step the teacher brings well into the pupil's mind the knowledge that will be required as a foundation for the new knowledge to be gained in the course of the lesson. In the PREPARATION step nothing new is learned: the relevant old knowledge is marshalled, and the pupil is made ready to receive the new.

What is the best method of achieving this? It will vary greatly with the topic and with the class. We can say, however, that the best method is that which calls for the maximum of activity on the part of the pupil, that compels him to depend upon his own unaided effort, that enables him to see that something has been achieved through that effort. The method that fulfils these conditions, securing purposeful effort on the part of all the children, ensures that children will be interested. Inattention, boredom and mischief are not likely to arise.

Obviously, the necessary past knowledge must be stated. One method, clearly not a very good one, is for the teacher to make the statement, "You will remember", etc. A preparation of this kind saves time, and ensures that only the knowledge actually required in the lesson is brought up, but it sacrifices far too much. A better method is a series of questions, calling for clear, concise answers. Still better is the demand by the teacher for statements by children—"Tell me what you know about . . .".

The teacher should formulate his demand in very clear terms, or much time will be wasted. The teacher about to give a lesson on the stage of Shakespeare's day will not ask his pupils, "Tell me what you know about the theatre", because so much of what the class will know has no relevance to the lesson. The teacher must decide exactly what he requires to use, and frame his questions so that he obtains it. And he should ask more than one pupil for a statement, and should distribute his questions widely, so that as many boys as possible take part in the lesson.

When the teacher is certain that the knowledge he needs as a foundation of his work is in the thoughts of his pupils, he is ready to proceed to the next step of the lesson. There remains one thing to be done—one thing that rounds off and completes the work done in the first step, and serves as an introduction to the next.

Some pupils will wonder as to why they have been asked to make statements about what they have already learnt, or to answer questions. Others will accept these things without wondering, as a part of the ordinary routine of school life. But, whether curious or incurious, boys will, as a rule, work better if they know the purpose of their work. Consequently, we choose this moment, when the preparation has come to an end, to tell them its purpose as well as that of the rest of the lesson. This is the STATEMENT OF AIM.

The teacher has already set out his own aims, both general and specific. These are obviously unsuited for communication to young children: they are unlikely either to be understood or to promote interest. But—" This morning we are going to try to understand what people living in the year 1600 saw when they went to the theatre ", is intelligible. It gives a direction to the pupil's efforts. Or—" This afternoon we are going to find out all that happened to a letter from the moment your mother put it in the pillar-box till it reached your aunt in Coventry " will, with younger children, serve the same purpose.

It is well to bear in mind that, though there are five formal steps in the lesson, this does not mean that the lesson period is to be divided into five equal portions, so that the preparation takes up exactly one-fifth of the total period. A sound preparation may require two minutes, ten minutes, or twenty-five minutes of a forty-minute lesson period. Sometimes a mere statement of aim is an adequate preparation: sometimes not. The teacher must be prepared to justify himself to the critic who asks, " Why did you take up so much (or so little) time with your preparation? "

Too often the feeling that one should get on with the work as rapidly as possible causes teachers to omit preparation altogether, or to shorten it unduly. The resulting saving of time is apparent only. If knowledge is built up on insecure foundations, sooner or later re-building will be necessary. The immense waste of time spent in revision is too often the result of failure to do work properly in the first instance. It is useless to say, "Children never remember", unless we require them to remember; giving them the practice in recall and the use of recollected material that ensures efficient retention.

Proper planning of the lesson will involve the decision as to the form that preparation will assume, the methods by which it will be developed and the time that must be given to it. These matters will be decided by the teacher's aims, and his decisions will be tested by the fulfilment or non-fulfilment of these aims. The preparation cannot be judged alone. It must be considered as a part of a whole, and as contributing to the intention of that whole.

Exercises

1. Suppose yourself in charge of an adult discussion group and responsible for delivering a brief talk that shall serve as a preparation for the discussion. Consider the talk you would give as preparation for discussion of the following topics:
    (*a*) A State medical service.
    (*b*) Universal compulsory military service.
    (*c*) Free university education.
    (*d*) Esperanto as a compulsory school subject.
    (*e*) Compulsion to vote in municipal and parliamentary elections.
    (*f*) Government control of newspapers.
    (*g*) The B.B.C. monopoly of broadcasting.

2. What "statement of aim" would you give to pupils at the conclusion of the "preparation" stage of lessons of the topics listed below? (It is important to have in mind the age of the pupils for whom the statement is intended.):

   (*a*) The coming of the Normans.
   (*b*) The River Ganges.
   (*c*) The people of Lapland.
   (*d*) Life in Canada.
   (*e*) New York.
   (*f*) The development of the tadpole.
   (*g*) Gulliver's Travels.
   (*h*) Levers.
   (*i*) The sugar cane.
   (*j*) How soap is made.
   (*k*) Basket-making.
   (*l*) The cotton industry.
   (*m*) Silk.
   (*n*) Coral islands.
   (*o*) A volcano.
   (*p*) Steamships.
   (*q*) Coal.
   (*r*) Postage stamps.
   (*s*) Paper.
   (*t*) News.
   (*u*) How a newspaper is printed.
   (*v*) William Caxton and his press.

CHAPTER V

THE SECOND STEP—PRESENTATION

THE second step in the lesson is the presentation of new matter. The teacher has already decided—or someone has decided for him—what this is to be: he has to plan how it shall be presented.

The point of departure has been decided by the preparation and the statement of aim. The presentation will develop from this point, stage by stage, in orderly sequence. This matter of development of the presentation raises, at the outset, some very important questions.

We can illustrate this by reference to some school subjects. Take arithmetic, for example. Arithmetic deals with numbers. It is part of the curriculum of every school, and everyone above the age of five is capable of performing some arithmetical operations, of an elementary kind at least. Yet very few of the population could, if challenged, say what a number was.

Compare this state of things with the teaching of geometry a generation or more back. Then every pupil learned by heart definitions of all the terms he would require to use, and statements of the self-evident truths he would take for granted. The aim was clearly to build up a body of unassailable knowledge from the most elementary foundations by means of logical steps. The presentation of geometry so taught followed a logical order.

Or again, take the teaching of biological science.

The unit of plant and animal life is the living cell. A method of teaching biology is to begin with the structure and functioning of the living cell, to go on to the study of plants and animals that are very simple aggregates of cells, thence to more complex ones, until the whole range of organisms has been covered. Such a method is a logical one.

An alternative method is to begin with something that the child already knows, though incompletely, through his own experience. He knows something of the cat and dog and rabbit, and we may make this knowledge our starting point. He may compare and contrast these familiar animals. He may study their habits and their structure. He may extend his study to other creatures already known to him—the earthworm, the butterfly, the goldfish, the pigeon and many more. He will discover similarities and differences. He will gradually reach the point when the life of the cell, as part of an organism, has meaning for him.

What name shall we give to this method, which starts from the familiar rather than from the fundamental—from what seems simple, but proves ultimately to be complex ? We may call it, in contrast with the logical method, a psychological method.

The psychological method is pursued in arithmetic. The child begins with experience of groups of objects. He learns the names of numbers. He learns through experience to add and subtract, to multiply and divide. He goes on, at a more senior stage of his school life, to generalize his knowledge by means of algebra. Learning arithmetic and algebra by a logical method is something very different, as anyone may see for himself by contrasting the treatment of the subject to be found in a treatise on algebra with that given in a school text-book. In the former he will find discussion of the symbols that will be used, and of the validity of the rules of the processes that most people employ without questioning them.

The fact that a distinction has been made between a psychological method and a logical method must not be taken to mean that the former makes no use of a reasoning process. Reasoning is used as much in the one as in the other. The difference lies in the approach only. The logical method should begin with what is "simple", in the sense that it cannot be further analysed, and the psychological with what has become known through experience. In the example already given, the biological cell is "simple" and the rabbit is "complex". But the rabbit is "near" to the child's experience, and the biological cell is "remote". The logical method proceeds from the simple to the complex, and the psychological method from the near to the remote. But the procedure, whether from simple to complex or from near to remote, must follow a sequence of reasoned stages.

A logical method is obviously suited to senior students, whose range of experience is wide and will have been submitted to a good deal of analysis. In all probability, the teacher's own most recent studies have followed a logical method. If he thinks, for example, of the circulation of the blood, he will begin from simple premisses, which make the circulation of the blood appear obvious and necessary. These premisses, so simple to him, are not simple to the children. They lie outside experience and comprehension. If the teacher gives the lesson as he received it himself, or deals with the topic as he reasons it out in his own mind, the lesson will fail. The use of simple words alone will not help, since the difficulty is not one of words, but of experience.

This is what is implied in the statement that the teacher must learn to re-think all that he knows, in terms of the experience of the children with whom he has to deal. He must ask—What knowledge and experience have these children I am about to teach that will enable them to understand as much about the circulation of blood as children of their age can be expected to know?

The new knowledge that is to be presented to the class will fall into an orderly sequence of stages, each of which may be summarized briefly in a single paragraph of the lesson notes. To each of these should be appended an indication of the way in which the teacher proposes to deal with this section—by questioning, by exposition, by explanation, by the use of verbal illustrations, by reference to maps or pictures or diagrams, or by drawings made on the blackboard. Generally, it will be well to plan questions to test that each stage has been mastered in preparation for the next; and, at the end, further questions to make certain that the new knowledge, as a whole, has been understood.

Exercises

1. Children have usually had some experience of the use of camouflage. How could this experience be used to lead them to appreciate the utility of the colouring of the zebra, the tiger, the jaguar, the giraffe, the donkey, the wood pigeon, and the seagull?

2. Children are assumed to be able to divide a 12-in. ruler into halves, quarters, thirds and sixths. Plan a presentation that will enable them to add together fractions of this type after converting them to equivalent fractions with twelve as the common denominator.

3. Plan the "presentation" of a simple lesson on the National Budget, developed from the assumption that the children realize that their mother's home expenditure is planned in relation to the family needs and the family income.

4. Plan a first lesson on Climate, developed from the children's experience of weather.

5. Make use of the heights and weights of the members of a class to give children a notion of the meaning of Averages.

6. Discuss, in a group, ways in which the following topics should be approached and developed with a class:
   (*a*) A £1 note.
   (*b*) Parliament.
   (*c*) Food.
   (*d*) The steam engine.
   (*e*) London.
   (*f*) Oxygen.
   (*g*) The magnet.
   (*h*) The herring.
   (*i*) Paper.
   (*j*) Aluminium.
   (*k*) Glass.
   (*l*) Plastics.
   (*m*) Rent.
   (*n*) Shares.
   (*o*) Gunpowder.
   (*p*) Sines and cosines.
   (*q*) The ellipse.
   (*r*) The earthworm.
   (*s*) British farming.
   (*t*) The Arab peoples.
   (*u*) Sea power.
   (*v*) U.N.O.
   (*w*) U.N.E.S.C.O.

CHAPTER VI

THE THIRD STEP—ASSOCIATION

A YOUNG pupil wrote, after a lesson dealing with Spain, "The Spaniards are very silly people; because, whenever they want to kill a bull, they risk their lives."

The teacher had spent a little time, in the course of the lesson, in describing a Spanish bull-fight. A boy had asked what was done with the body of the dead bull, and the teacher had replied that it was sold at a cheap rate in the butchers' shops. To the boys, this was new knowledge.

The boy of whom mention has been made had earlier knowledge of part of the subject, however. He knew that the beef in the English butchers' shops came from animals killed, not in the dangerous manner his teacher had described, but in the comparative safety of the slaughter-house. He had linked up his old knowledge with the new, with a remarkable result.

Any fresh piece of knowledge must affect what we previously know and believe. Sometimes the new knowledge contradicts the old belief. More often, in lessons where the teacher assumes that the pupil already possesses accurate information, which he elicited and organized at the preparation stage, and where further accurate knowledge is given during the presentation stage, what should occur is not a contradiction, but a fusion. This may be a simple association, but it is often something much more complex. The example given at the beginning of this chapter shows that the process can go wrong, leading to ridiculous results.

Clearly, then, the teacher's function at this stage is so to direct the pupil's mental activity that the old and the new are linked together into a new truth. Sometimes we can say that the pupil knows more. Sometimes the old knowledge has been qualified or modified. Sometimes the pupil is led to see that what he knew was merely a single instance of the working of an important rule, which he is now prepared to formulate.

In general, the teacher will give the necessary guidance by means of a sequence of well-chosen questions. He must not supply the answers—because this step in the lesson must be the work of the pupil himself. It is *he* who must associate, synthesize, formulate, or generalize. If the teacher gives the formulation, or synthesis, or generalization, it is merely an additional piece of new knowledge, a further item in the presentation. The teacher must only guide and stimulate. The step itself must be made by the pupil, by means of his own mental activity: and the teacher must think of this, not as mere fact, gained by observation or by listening, but as a creative process through which something new is made by the pupil himself from material given him at different times in the past.

The great importance of the step will become evident upon reflection. The mental activity called for is akin to that which is required for invention, discovery or artistic creation. A few years back the army tank was something quite new, and it was offered to professional soldiers well acquainted with all the knowledge proper to their trade. It became necessary to modify ideas of the conduct of warfare in the light of the possibilities of this new weapon. Very few men indeed were able to make the necessary adjustment.

This is one example only. Many more might be given. If the teacher will notice in himself, day by day, the effect of new knowledge upon himself, his opinions and beliefs, and will attempt to discover through self-observation how these changes come about, he will realize the importance and value of this step in the lesson for the development of his pupils. He will realize that it is a step that cannot be omitted.

It will be noticed, too, how interesting this part of the lesson can be to pupils, and in a different manner from other steps. Children are interested when they are asked to recall what they have previously learned, and when they are being told new and striking facts. They are more deeply interested when, through their own activities, they are creating something new; when they are telling of discoveries they have made.

The teacher will realize, too, how sharply success or failure at this stage tests his whole lesson planning. He has announced to the class, at the end of the preparation stage, an aim. At the conclusion of the association step, that aim has been achieved, or it has not. The teacher has either succeeded, or he has failed.

If he fails, it is generally because there has been something wrong with his planning. He must go carefully over his lesson plan and find out where the fault lay. It is very unlikely that all his planning was wrong. It is not likely that most of it was wrong.

Just as the failure of a water supply is due to a single small local fault, as a rule, so the failure of a lesson is due to the teacher's failure to realize the significance of something he has omitted, or wrongly estimated. He should be ready to admit failure, when it occurs, but he should not be depressed by it. The failure itself should give him new knowledge which, properly fused with what he knew before, should materially advance him on his career.

Exercises

1. A boy describes a desert as a sandy waste. Then he reads that the soil of the Desert of Gobi is largely loess, regarded as one of the most fertile soils in the world. Consider the probable result in the boy's mind. How would you discuss the matter with him ?
2. Discuss the ways in which facts were associated by the men who made the following discoveries :
    - (*a*) The blood circulates in the body.
    - (*b*) The rate at which a body falls to the earth does not depend upon its weight.
    - (*c*) Plant and animal tissues consist of cells and cell products.
    - (*d*) The earth is not a flat body, but is globular.
    - (*e*) Egyptian hieroglyphs were alphabetic characters.
    - (*f*) Lightning is an electrical discharge.
    - (*g*) Malaria is not caused by bad air, but is conveyed by a mosquito.
3. Suppose the following to be statements of fact. Consider their effect upon your own thought.
    - (*a*) A small party of Englishmen have arrived on the moon's surface and are communicating with the earth by radio.

(*b*) An effective protection against atomic bombs has been discovered.

(*c*) A cheap process of making gold from iron has made gold comparatively worthless.

(*d*) The Government has decided to distribute bread free of charge.

(*e*) Living organisms have been produced artifically in a laboratory.

(*f*) A chemical means of doubling the length of human life has been discovered.

4. With what facts already known to you did you link up the "facts" of Exercise 3?

CHAPTER VII

THE FOURTH STEP—APPLICATION

SHOULD the earlier stages of a lesson lead to the formulation of a rule, the next step is obviously its application. With most pupils, the desire to test or to use the rule arises naturally, perhaps as curiosity as to whether the rule really " works ".

In the case of an arithmetic lesson dealing, for example, with the addition of simple fractions, we arrive at the rule—" The fractions must be changed into equivalent fractions with a common denominator, and the numerators of these equivalents must be added together. This total is the numerator of the sum, and the common denominator is its denominator ". The obvious application of this rule is the working of appropriate exercises in the addition of simple fractions.

The most suitable method is sometimes to leave the children with the exercises. But, in the example given, the rule consists of two parts, so that it may be better first to see that all the pupils convert the given fractions into equivalents with a common denominator, before requiring them to make the addition. The APPLICATION step requires as much care and thought, both in respect to content and to method, as any of those which precede it.

It is very important to be certain that what is called an " application " is really so. Mr. Squeers, it will be remembered, after teaching his boys to spell " window " (which he spelt " w/i/n/d/e/r ") sent them to clean them, in the belief that the exercise would fix the spelling in mind. But however worth while the cleaning of windows may be as a training of young boys, it is *not* an application of spelling.

It will sometimes be found that the application of the conclusions arrived at in a lesson cannot be made within the lesson period. For example, in a mensuration lesson boys may learn how to find the area of a non-rectangular field, but the actual surveying of the school playing-field will require a further lesson. Here the teacher would not be justified in overlooking an immediate application of what has been learned to an exercise in which the boys were required to test their understanding of the rule by measuring a simple rectilinear, non-rectangular form, and calculating its area. The teacher should think of the possibility of simple applications, capable of being included within the lesson, of applications that will need one or more lesson periods to themselves, and of wider applications (the most important of all) which affect the pupil's life and conduct, and are made by the pupil himself, both in and out of school, when the need arises.

If the lesson does not appear to lead to an immediate application, the teacher should consider carefully whether this is because he has failed to discover one. It is at such times that the value of discussion between the members of an interested group of serious students becomes apparent, and the insight that comes through experience of teaching manifests itself.

Take, for example, a lesson on the subject of the Good Samaritan. The rule that will be formulated after the story has been presented and discussed is clearly some simple paraphrase of "Thou shalt love thy neighbour as thyself ". To many people—perhaps to most—who give lessons on this topic, the matter ends with the formulation. The teacher is satisfied to leave the matter here, and to hope that in some way not clearly defined the lesson will have an effect. Meanwhile he meets, in the daily life of the school, with countless little occurrences that testify that pupils do not love their fellow-pupils as themselves. All the children who take part in the lesson are certain that, should they find themselves in the position of the Good Samaritan, with donkey and wine and oil and an injured man, they would be quite willing to act as he did ; and equally certain that they will never find themselves in such a situation. Unless specific instances, in the daily round of school life, are selected by the teacher and pointed out to the children, or brought out in discussions between the teacher and his pupils, the lesson will be little more than a pleasant period spent in listening to an attractive story. If we assert that this is in itself worth while, we have at the same time to admit that it was not the aim of the lesson.

We may sum up by saying that the APPLICATION gives reality and concreteness to formulations that, without them, are in real danger of being mere collocations of words, often remembered and even reproduced in examination papers, without any realization that they stand in close relation to thought and action. The APPLICATION is not only a test of knowledge, a means of discovering whether the pupil has understood the lesson or not, but it is a means of ensuring knowledge and understanding. Hence an immediate, simple application of the conclusion arrived at should always be made in the lesson itself, unless this is impossible: but the teacher should be convinced of its impossibility before he decides to omit the step. If the application cannot be included in the lesson, it must be the subject of a lesson given as soon as possible after the first.

Meanwhile, the teacher must bear in mind the still further applications that he hopes pupils will make for themselves, so that he may, when occasion serves, stimulate the children by question, suggestion and discussion.

Exercises

1. Assume that the following formulations have been arrived at in the course of lessons:
   - (*a*) The product of the sum and difference of two numbers is the difference of their squares.
   - (*b*) If a body is immersed in water, its apparent loss of weight is the weight of the water displaced.
   - (*c*) Chemical action is hastened by heat.
   - (*d*) Machines enable us to make more goods in less time than is possible when goods are made by hand.
   - (*e*) There are two sides to every question.
   - (*f*) The sum of the squares on the sides of a right-angled triangle which subtend the right angle is equal to the square on the hypotenuse.
   - (*g*) Differences of language are a frequent cause of misunderstanding between peoples.
   - (*h*) Science begins with accurate observation.
   - (*i*) Air in motion feels cold to the hand. The thermometer is the only test of whether a room is properly warm.
   - (*j*) In many ways the human body resembles a machine.

Suggest, in respect of each of these:

- (*a*) An application to be made as a step in the lesson.
- (*b*) Applications that will occupy subsequent lesson periods.
- (*c*) Applications that the pupils should make for themselves as part of their everyday thought and action, or at such times as appropriate occasions present themselves.

CHAPTER VIII

RECAPITULATION

THE lesson proper comes to an end with the step we have called APPLICATION. When this has been completed, nothing more remains to be done, in the sense that nothing new is to be learned. But it is both convenient and desirable, before leaving the lesson, to look back and survey the road that has been travelled. If the lesson has been successful, the pupil will have passed from the stage at which he possessed certain knowledge to a further one where he finds himself in possession of new knowledge, which has been presented to him or which he has been stimulated to discover, which has been welded into a unity with his older knowledge, and has been applied by him in an appropriate exercise. This has been largely achieved through thought on his own part, and with the aid of questions, verbal illustrations, explanations and blackboard sketches, as well as maps, pictures or diagrams.

The lesson, that has lasted forty minutes or so, could be surveyed briefly in a very few minutes. All the major points could be marshalled in order, and jotted down in such a way that the inspection of the record would, at any subsequent time, recall all the essentials of the lesson.

The word "recapitulation" does not completely suggest what is meant. The chapter headings of a book do not, as a rule, give a full clue to the contents. It is essential that the brief statements that make up the recapitulation should, by means of their matter and their sequence, make the lesson clearer to the pupil.

The method followed must be left to the teacher. He may, whenever he thinks a suitable point in the lesson has been reached, ask pupils to summarize briefly what has been learned ; and, when he is satisfied with a statement, he may write it on the blackboard. Thus, when he reaches the end of the lesson, it has already been properly recapitulated. He may turn the blackboard away from the pupils, and ask them to give him, in proper order, the statements written on it.

The teacher may prefer to wait till the end of the lesson, and then, by questioning the class, obtain the statements that will adequately summarize in proper sequence the points of the lesson.

The summary on the blackboard is not, it should be pointed out, RECAPITULATION. Recapitulation is the process of surveying briefly something that was not brief. Just as a man may recall in a few moments the essential details of a journey that required months to make, so the pupil, if he has really understood the lesson, may connect up all its main parts in an orderly way in a few minutes—in less time, in fact, than it took him a little while before, to work out for the first time one of the facts for himself. His ability to recapitulate is evidence that he has mastered the lesson.

Recapitulation is impossible unless the pupil has understood the relations between the parts of the lesson. Consequently, when the teacher insists upon recapitulation being properly done, he is ensuring that the pupil does understand these relations, and is deepening this understanding also. It may be said, in passing, that the capacity for recapitulating is not as general as it should be. Everyone who has been bored by the well-meant efforts of people to tell him the plot of a film or a play will have often wished that the narrator possessed the capacity for recapitulation that enabled one man to compress volumes of military theory into the statement that "attack is the best defence" and another to summarize human duty in the aphorism "Fear God; honour the King". Again, too few students have been trained to recapitulate the sections of the text-books they read before they pass on to other sections.

Recapitulation, then, at the end of a lesson, is a valuable mental exercise, quite apart from its function as a part of the lesson. The training it gives at an early stage can be continued; and if, at higher stages of learning, it is still demanded of students, it will tend to make their studies more efficient, and to give them increased mastery of material. It ensures that not only the several parts have been understood, but also the wholes which they compose.

Exercises

1. Prepare a recapitulation of this book.
2. Make a point of writing brief recapitulations of every lecture you attend, and of every chapter of the text-books you are using.

   Test the worth of these by reading them again after the lapse of a few days, to discover how far they enab you to recall the lecture or the reading as a whole; bringing back not only the subject-matter, but the way in which the argument was developed.

3. Write a brief recapitulation of any social or political theory that greatly interests you. Get a friend to read it, and use his comprehension of it as a test of your success.

4. Your own special studies have made it possible for you to read critically one of the many "outlines" published for the use of students, and to judge whether it is a true recapitulation of the subject or a mere compendium of inconsequent facts prepared for examination cramming.

CHAPTER IX

THE BLACKBOARD

WHATEVER appears on the blackboard, whether written or drawn, must be legible. Legibility is the first requisite of all blackboard work. The smallest lettering and the details of all sketches must be visible to every child in the class.

The nature of blackboard work is determined, also, by the nature of the media we are compelled to use. A thin cylinder of friable, brittle material, which must be firmly gripped near its lower end, does not give the user the same freedom of handling that he is accustomed to when he uses a brush or a pencil. And chalk will not take a fine point or keep any sort of point. Chalk marks on the blackboard must be, in practice, of uniform thickness. If we attempt to obtain gradations by reducing our pressure on the chalk, we obtain marks whose greyness reduces their visibility.

In practice, then, we are limited to firm white lines of uniform thickness. Even if we attempt to distinguish objects by the use of coloured chalk to produce tinted patches, it is best to surround these with firm white outlines.

The sketch, as the pen or pencil artist understands it, should not be attempted by the class teacher. The conditions in which blackboard drawings have to be made, the materials which have to be used, and the demand for maximum visibility, make it necessary that the blackboard " sketch " shall be something very different from the studio " sketch ". The teacher may, and probably will, begin his blackboard drawing by sketching in construction lines and details so lightly that they are invisible to everyone but himself, but he will go on to rub out the first, and to replace the second with a firm and—as a rule—continuous line.

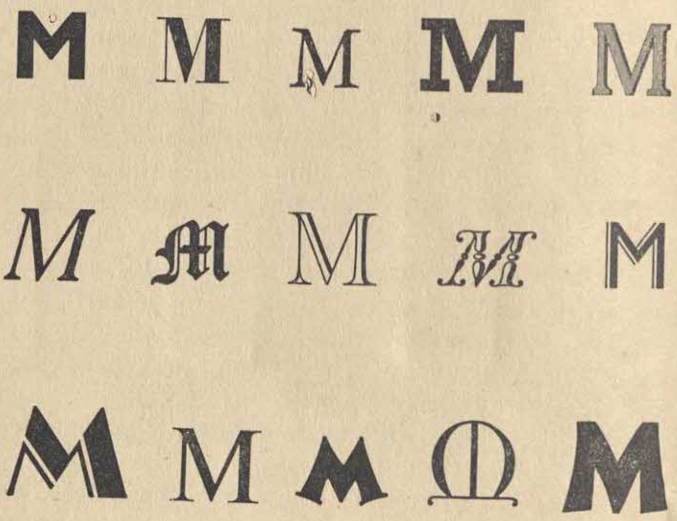
The written work will be either in cursive or " print " characters. Of the two, the latter are far more visible from even a short distance. If the teacher chooses to write in cursive lettering, he must take care to write very clearly and boldly. Most manuscript is far less legible than print, and the majority of people develop personal idiosyncrasies of the pen that add to the difficulty of deciphering what they write. This is the reason why we are asked to use block capitals on documents of any importance, and why editors, experienced persons though they are, refuse to waste time in deciphering stories written by hand. We assume, then, that any teacher using the blackboard effectively will work to a great extent with " print " lettering.

Inspection of any poster hoarding, or of the advertising pages of any journal, will remind one that there are many varieties of printed letters. Examine a single letter—R, say. Its proportions, its ornaments, its variety of strokes, give it a character of its own. Any particular " R " we choose is a member of a group of figures and letters differing from it in form, but sharing with it all its other characters. This group the printer calls a " fount " of type, and each fount has its own name—Cheltenham, Baskerville, Plantin, Caxton, etc.

Anyone who will take the trouble to fix the advertising page of a well-printed journal to a wall, and then stand well away from it, will find that letters differ considerably in visibility and in legibility, even when the letters are of the same size. It is difficult to be certain, sometimes, that the somewhat dazzling patch on the paper is a letter at all: at other times we are certain that we see a letter, but cannot decide which it is. Obviously, the teacher who wishes to use his blackboard effectively with a class should make up his mind what kind of lettering he proposes to use. Having made his decision, he should go on to understand the construction of the letters and to practice making them frequently, until he can write them on the blackboard with the same ease that he signs his name on paper.

The group of letters printed on page 58 will illustrate the points we are endeavouring to make. They are specimens of the letter "M" chosen from different founts of type. They are of the same size. Some are heavy. Some are light. Some are plain. Some are ornamented. Some are made with uniform strokes. Some are made with varied strokes. The student will find it worth while to examine them all with some care, and to arrange them in order of legibility.

It is clear that we shall have to select the lettering to be used from amongst the most legible characters, and then confine ourselves to those most suited to the tools we have to use—to a blackboard and a piece of chalk. It soon becomes obvious that ornaments, even when they give to lettering a certain beauty, detract from legibility; and hence they must be banned


M M M M M
M M M M M
M M M M M

from the lettering we choose for blackboard work. Letters that depend for their legibility upon a variety of thicknesses of stroke, too, are unsuited to chalk. We are, in practice, restricted to the use of letters without ornaments, composed of strokes of uniform thickness. The visibility and legibility of lettering of this kind has led to its choice as a medium for showing the names of stations in the Underground Railways of London, as well as for a wide variety of other public purposes. One further point may be mentioned: in actual practice, the teacher will find that wide letters are more visible than cramped, narrow ones.

A B C D E

F G H I J

K L M N O

P Q R S T

U V W X Y

Z

So much, then, for capital letters. For small letters simple script characters are best. The alphabet below will serve as a useful guide.

a b c d e f g h i

j k l m n o p q r

s t u v w x y z

Simplicity is an important element of all good blackboard work. Sketches will generally consist of a few bold clear lines. Lettering will be made up of uniform strokes. If certain words or sentences are to be emphasized, they may be written with coloured chalk, provided that a colour of high visibility is chosen, such as, for instance, bright yellow. Coloured chalks can be used with great effect, provided they are used with discretion, and sparingly; and provided that visibility is not sacrificed. The teacher should always examine his blackboard work, not only from the distance of a few yards, but from the more remote corners of the classroom.

At the end of the lesson there will be, on one of the blackboards, a summary, whose general character should be in the mind of the teacher from the beginning. It is often a good plan to draft the blackboard summary before writing the notes of the lesson, and to think of it as the concrete expression of at least one of the lesson's aims.

The blackboard summary will be made up of written sentences of varying importance, of diagrams and drawings. These are the elements making up the whole, but the whole is more than the elements alone, just as a motor-car is something more than a collection of components. The teacher, by means of spacing and arrangement, imposes a unity upon the whole. What is meant here can perhaps be best understood by studying the layout of well-designed advertisements. Publishers' advertisements in the *Sunday Observer* or *The Times Literary Supplement*, fashion advertisements in *Vogue*, or the general advertising in the *Sketch* or *Tatler* or *Punch* will show how a variety of matter bearing upon the product of a firm is given unity through proper spacing and arrangement, diverse as the separate elements may be in their nature. This does not, of course, mean that a blackboard summary is to look like an advertisement: it should not, because the advertiser's aims and resources are different from those of the teacher. Both, however, have a common problem—that of combining a number of diverse elements into a single whole. The advertiser is dealing with a single product or group of products, and his appeal to the public is a single appeal which he makes in the hope of eliciting a single type of response. The teacher is dealing with a single lesson, and his summary is a single presentation made for the purpose of presenting that lesson as a single whole. The separate parts are not where they are for the purpose of drawing attention to themselves as parts, but to contribute to a single effect. The teacher's problem is that of composition.

It is clear that the effective use of the blackboard is no simple matter, but it is so bound up with efficient classroom practice that the teacher who does not master it will always be severely handicapped as a teacher. Probably those who are least able to use the blackboard well are those who have never thought about or understood the peculiar problems it presents. Lettering that is not legible, muddled assemblies of drawings and words, are obviously the work of people who have never realized that legibility and unity are of fundamental importance in blackboard work. Clear insight into the purpose of blackboard work and acceptance of the limitations imposed by the medium are essential. Then, only assiduous practice and intelligent self-criticism will enable the teacher to fulfil the aims he has in view. The purpose of all training is to acquaint the prospective teacher with an outlook upon his work and an understanding of his problems that will enable him to develop himself fully as a teacher by means of the experience he will gain in the course of his professional life.